AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A multiple zone gas distribution apparatus for controlling temperature across a workpiece during processing, the apparatus comprising:

a chuck having a top face configured to hold a workpiece during processing, the chuck top face defining inner and outer zones between the top face of the chuck and the workpiece into which zone coolant gas may be admitted;

inner and outer zone feed lines adapted to feed the coolant gas to the inner and outer zones of the chuck;

a pressure and flow control system adapted to supply zone coolant gas to the feed lines with separate pressure for the inner and outer zones controlled to control the temperature across the workpiece; and

inner and outer zone bleed lines connected to the respective inner and outer zone feed lines respectively between the pressure and flow control system and the chuck, the inner zone bleed line having a connecting line in fluid connection with the outer zone bleed line and a fixed orifice adapted to continuously bleed the pressure of the inner zone to the outer zone bleed line during processing of the workpiece, the inner zone bleed line having an evacuation valve which is adapted to bypass the fixed orifice for immediate inner zone evacuation, and the outer zone bleed line having an evacuation valve for pressure release.

2. (Previously Presented) The apparatus of Claim 1, wherein the outer zone bleed line evacuation valve is adapted to be closed during processing of the workpiece and the outer zone pressure bleeds between the chuck and the workpiece to the surrounding chamber.

3. (Original) The apparatus of Claim 1, wherein the inner and outer zones are concentric circular zones.

4. (Original) The apparatus of Claim 1, wherein the inner and outer zones of the chuck top face each include a plurality of holes arranged in circular pattern for delivery of coolant gas.

5. (Previously Presented) The apparatus of Claim 4, wherein the inner and outer zones of the chuck top face include at least one shallow circular groove to provide flow of coolant gas from the plurality of holes in a circular direction along the underside of the workpiece.

6. (Previously Presented) The apparatus of Claim 1, wherein the pressure and flow control system is adapted to control the supply of zone coolant gas to the feed lines to achieve different pressures in the inner and outer zones throughout the processing of a workpiece to control the temperature across the workpiece.

7. (Previously Presented) The apparatus of Claim 1, wherein the inner and outer evacuation valves allow evacuation of the inner and outer zones in 5 seconds or less.

8. (Currently Amended) An apparatus for detecting dechucking in a multiple zone wafer cooling system, the apparatus comprising:

a chuck having a top face configured to hold a workpiece during processing, the chuck top face defining first and second zones between the top face of the chuck and the workpiece into which zone coolant gas may be admitted;

first and second zone feed lines adapted to feed the coolant gas to the first and second zones of the chuck;

a pressure and flow control system adapted to supply coolant gas to the feed lines with separate pressure for the first and second zones controlled to control the temperature across the workpiece; and

first and second zone bleed lines connected to the respective first and second zone feed lines respectively between the pressure and flow control system and the chuck, the first zone bleed line having a connecting line in fluid connection with the second zone bleed line and a fixed orifice adapted to continuously bleed the pressure of the first zone to the second zone bleed line during processing of the workpiece, the first zone bleed line having an evacuation valve which is adapted to bypass the fixed orifice for immediate first zone evacuation; and

wherein the pressure and flow control system provides a signal indicating dechucking when the flow rate of the coolant gas increases more than a predetermined amount.

9. (Original) The apparatus of Claim 8, wherein the first and second zones are concentric zones.

10. (Original) The apparatus of Claim 9, wherein the first zone is an inner concentric zone and the second zone is an outer concentric zone.

11. (Previously Presented) The apparatus of Claim 8, wherein the second zone bleed line includes an evacuation valve which is adapted to be closed during processing of the workpiece such that the second zone pressure bleeds between the chuck and the workpiece to the surrounding chamber.

12. (Withdrawn) A method of controlling temperature across a workpiece during processing using the apparatus according to Claim 1, the method comprising:

holding a workpiece on the top face of the chuck;

feeding zone coolant gas to the inner and outer zones via the inner and outer zone feed lines, respectively;

controlling the pressures of the zone coolant gas with the pressure and flow control system to maintain separate pressures for the inner and outer zones to control the temperature across the workpiece;

continuously bleeding of the inner zone coolant gas through the inner zone bleed line orifice during processing of the workpiece; and

evacuating the inner zone coolant gas from the inner zone by bypassing the inner zone bleed line orifice.

13. (Withdrawn) The method of Claim 12, further comprising evacuating the outer zone coolant gas from the outer zone through the outer zone bleed line by opening an outer zone evacuation valve.

14. (Withdrawn) The method of Claim 12, further comprising bleeding the outer zone coolant gas between the chuck and the workpiece into a surrounding chamber.

15. (Withdrawn) The method of Claim 12, wherein the inner zone coolant gas is evacuated from the inner zone to allow removal of the workpiece from the chuck in a transition time of 5 seconds or less.

16. (Withdrawn) The method of Claim 12, wherein the continuous bleeding of the inner zone coolant prevents excess pressure from the inner zone from migrating into the outer zone.

17. (Withdrawn) A method of detecting dechucking in a multiple zone wafer cooling system using the apparatus according to Claim 8, the method comprising:

holding a workpiece on the top face of the chuck;

feeding zone coolant gas to the first and second zones via the first and second zone feed lines, respectively;

controlling the pressures of the zone coolant gas with the pressure and flow control system to maintain separate pressures for the first and second zones to control the temperature across the workpiece;

continuously bleeding the first zone coolant gas through the first zone bleed line orifice during processing of the workpiece; and

detecting dechucking by sensing when a flow rate of zone coolant gas to the second zone increases more than a predetermined amount.

18. (Withdrawn) The method of Claim 17, wherein the first zone is an inner zone and the second zone is an outer zone concentrically surrounding the inner zone.

19. (Withdrawn) The method of Claim 17, further comprising evacuating the second zone coolant gas through a second zone bleed line by opening a second zone evacuation valve.

20. (Withdrawn) The method of Claim 17, wherein the first and second zone coolant gas is evacuated from the first and second zones to allow removal of the workpiece from the chuck in a transition time of 5 seconds or less.

21. (Previously Presented) The apparatus of Claim 1, wherein the fixed orifice is positioned along the connecting line.

22. (Previously Presented) The apparatus of Claim 21, wherein the inner zone bleed line is adapted to be bled via the connecting line and the outer zone bleed line.

23. (Previously Presented) The apparatus of Claim 8, wherein the fixed orifice is positioned along the connecting line.

24. (Previously Presented) The apparatus of Claim 23, wherein the first zone bleed line is adapted to be bled via the connecting line and the second zone bleed line.

25. (Previously Presented) The apparatus of Claim 1, wherein the chuck is surrounded by a semiconductor wafer processing chamber for processing a semiconductor wafer held on the top face of the chuck.

26. (Previously Presented) The apparatus of Claim 25, wherein the processing chamber is a plasma etching chamber.

27. (Previously Presented) The apparatus of Claim 8, wherein the chuck is surrounded by a semiconductor wafer processing chamber for processing a semiconductor wafer held on the top face of the chuck.

28. (Previously Presented) The apparatus of Claim 27, wherein the processing chamber is a plasma etching chamber.

29. (Withdrawn) The method of Claim 12, wherein the workpiece is a semiconductor wafer held on the top face of the chuck during processing, the chuck is surrounded by a semiconductor wafer processing chamber.

30. (Withdrawn) The apparatus of Claim 29, wherein the processing chamber is a plasma etching chamber.